of the past what rightly interests us to know, and what the spirits of the great departed would not resent our knowing. To retail the spiteful gossip that clings to the memory of Kepler or Cardan, and to linger over the details of the Newton-Leibnitz controversy, is not the mark of a generous mind, and is utterly unprofitable besides. We are glad that, in this respect, Prof. Cajori's book is above reproach. G. B. M.

HINDU MEDICINE.

A Short History of Aryan Medical Science. By H. H. Sir Bhagvat Sinh Jee, K.C.I.E., M.D., D.C.L., L.L.D., F.R.C.P.E., Thakore Saheb of Gondal. Pp. 280; with 10 plates. (London: Macmillan and Co., Ltd.)

THE author, an Indian prince, after studying medicine with diligence and distinction in this country, applied himself on his return to India to a study of the ancient medical science of Hindustan. As a result, he presents in this treatise a bird's-eye view of the marvellous civilisation of India, and he does so from the point of view of a Hindu, in a spirit of faith and optimism creditable to his piety and patriotism. Perhaps a larger exercise of the critical faculty might have been more acceptable to Western intelligence, especially as, in some matters of history and chronology, the author is at issue with European authorities; but it might also have spoiled the picture, which is simple and bright. The writer prefaces his account of Indian medical science by a brief sketch of the early civilisation of the Hindus and of their religion, philosophy, science and art. The science and art of medicine were an important feature in this great system, elaborated according to the same principles and by the same methods as other branches of knowledge, and therefore possessing the same merits and the same faults. "The Hindus believe," the author tells us, "that like all their other sciences, the science of medicine has been revealed to them."

The bible of medicine is the "Ayur Veda," whose authorship is attributed to no less a personage than Brahma. Subsequent commentators, chief among them Charaka and Sushruta, have reproduced and somewhat amplified this record. The author, with great insight and judgment, gives an interesting history and epitome of the doctrines and practices laid down in these works, of which he appends a list of 107. We observe that he has not included among these the "Navanitaka," an ancient Sanskrit medical manuscript found by Captain Bower at Kuchar, in Eastern Turkestan, in 1890, and which is believed to be older than the works of Charaka and Sushruta. The development of science by the wise men of the East was a mixture of observation and contemplation. Their observation was keen though somewhat crude, but when the results were submitted to the process of intellectual digestion, an excessive addiction to analysing and systematising produced a code of knowledge into which imagination largely entered, and which was specious and unsound. The product, possessing the character and sanction of a revelation, became straightway a fixed guide, which has remained authoritative and unaltered through the ages. The early medical observers scrutinised closely the structure and functions of the human body, and not content with noting and recording these, they must fully and finally explain them. For this purpose they invented three principles or essences or spirits—*vata*, *pitta*, and *kafa*—wind, bile, and phlegm, which, acting upon and through the constituent parts of the body, gave rise to all the manifold physiological manifestations of the organism. Disease was held to arise from excess, defect, or disorder of one or more of these humours, and the object of the physician in examining the patient, was to detect which humour or humours were at fault, and select the remedy calculated to restrain, stimulate, or correct the aberrant fluid. A doctrine of temperaments was built on the same basis. Associated with these hypothetical spirits, other supernatural agencies were postulated; faults committed in a former state of existence, and the operations of demons, were included among disease causes. It is not surprising, therefore, that rites, ceremonies, amulets, omens, and charms entered largely into treatment. The Thakore Saheb advances strong claims for the antiquity and excellence of Indian medicine. He contends that the medical science of the Greeks, Egyptians, and Arabians, was extensively borrowed from India. He asserts that Jenner and Pasteur were anticipated in the matter of protective inoculation, Morton and Simpson in anæsthesia, Lænnec in auscultation, Piorry in percussion, and Lister in antiseptics by Indian sages; that the vaunted discovery of Harvey was also presaged, if not preceded, by Indian doctrines regarding the circulation of the blood. He shows that modern medicine has derived important practices, such as massage, and many useful drugs, from India, and even goes the length, in apologising for the shortcomings of Indian surgery, of asserting that in ancient times the use of drugs prevented or dispersed tumours, and other conditions now demanding surgical intervention. He expounds at some length the rules of hygiene and disease prevention laid down by the *rishis*. They are mostly personal, and their elaboration is astonishing. Life to the orthodox Hindu was a series of minute rites governing every item of daily existence—some salutary, but most of them frivolous.

Still, with all its absurdities, Indian medicine was a triumph of acumen and industry, and the author has succeeded in placing a very clear and complete compendium of it on record in this book, which he who runs may read. Perhaps his hope that rational and progressive medical science may still be able to learn something from Aryan medical science is a feasible one; but the materials and methods of the latter must to that end be recast in the furnace of modern inductive research.

OUR BOOK SHELF.

On the Adjustment and Testing of Telescopic Objectives. By T. Cooke and Sons. Second edition. Pp. 96. (York: Delittle and Sons, 1896.)

THE first edition of this admirable little volume appeared in the year 1891, and since that time its fame has spread abroad, and both German and Italian translations have been made. In this short interval of time a very notable advance has been made in the construction

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of objectives. The new triple photo-visual objective is the outcome of experiments made by Messrs. Cooke's optical manager, Mr. H. Dennis Taylor, in the direction of improving the so-called achromatic telescope. The success with which he has been rewarded, has given astronomers an objective which is not only free from colour aberrations, but which can be used for celestial photography without the necessity of any further adjustment.

In the present edition this new lens is fully referred to, and the communications of Mr. Dennis Taylor to the Royal Astronomical Society are reprinted in full. A supplementary chapter is also added, describing the adjustments of its component parts; this will, no doubt, prove most serviceable to those who are the fortunate possessors of this lens.

In the main, the general text of the book has not been very considerably disturbed; modified views, and the insertion of up-to-date information, have of course required here and there changes in the text, and to some extent enlargement.

Users of telescopes cannot do better than make themselves thoroughly acquainted with the contents of this excellent and valuable source of information. It must be remembered that we are here enabled to make use of the knowledge of those well experienced in the making and testing of numerous objectives, and amateurs and others may gather many a wrinkle, the knowledge and use of which will make all the difference between the bad and good working of an objective with which they are making observations. W. J. S. L.

Fuel and Refractory Materials. By A. Humboldt Sexton. (London: Blackie and Son, 1896.)

THIS book is intended to meet the want of a manual intermediate in size between the exhaustive treatises of Percy, Mills, and Rowan on the one hand, and such brief outlines of the subject as may be found in manuals of metallurgy on the other. Seven chapters out of fifteen are devoted to fuel, one to the recovery of bye-products, three to furnaces and refractory materials, whilst the subjects of pyrometry, calorimetry, utilisation and testing of fuel are dismissed in one chapter each. The book is written in a clear and concise style, and is profusely illustrated with excellent diagrams. The subjects of coking, recovery of bye-products, and preparation and use of gaseous fuel are treated in a very practical manner and in great detail. The chapter on the important subject of pyrometry is not so satisfactory, as although an account is given of almost every type of instrument, whether obsolete or not, the impression is given that the author has little practical knowledge of many of the instruments described, as scarcely any criticism is offered, and the descriptions are often in the inventor's own words. The result is that an engineer, wishing to put in a pyrometer for practical purposes, would receive little assistance in choosing the best type of instrument for any special case. An exact definition of the various thermometric "scales" of the several instruments would also be desirable, so that the exact meaning of a temperature measured, say on the platinum resistance scale, could be clearly shown. The same historic completeness and lack of criticism applies to the chapter on calorimetry; a student might get the idea that for practical purposes it is a matter of indifference whether the heat of combustion of a fuel be determined by Berthier's process (fusion with litharge) or by the Berthelot-Mahler process. Taking the size of the book into consideration, very few essential points have been omitted. It is to be hoped, however, that in the second edition space may be found in Chapter x. for a description of an anemometer of the Fletcher type, the direct measurement of the gaseous velocity in a shaft being much preferable to the indirect methods given. The approximate analysis of flue gases is now so common in works, that a short account of the methods used, together with an application (such as a boiler trial), would be very useful. The only method mentioned for carrying out such analyses is both cumbersome and expensive. At the end of the book is an admirable set of references to works and papers bearing on the subject.

The Lepidoptera of the British Islands; a Descriptive Account of the Families, Genera and Species indigenous to Great Britain and Ireland, their Preparatory States, Habits and Localities. By Charles G. Barrett, F.E.S. Volume III. HETEROCERA: *Bombyces*, *Noctuæ*. Pp. 396. 8vo. (London: L. Reeve and Co., 1896.)

THE present instalment of Mr. Barrett's voluminous work includes the following families: BOMBYCES: *Bombycidæ* [more correctly *Lasiocampidæ*], *Endromidæ*, *Saturnidæ*, *Drepanulidæ*, *Notodontidæ*. NOCTUINA: *Cymatophoridæ*, *Trifidæ* (*Diphthera* to *Agrotis*).

The habits, localities and transformations of the various species are dealt with at considerable length, and practically include most of the available information respecting British *Lepidoptera* likely to be useful to a practical collector. Information respecting the occurrence of British species abroad is likewise furnished in most instances, and reputed British species are also mentioned incidentally.

Entomologists who do not confine their studies to British insects, and who are more interested in classification than in habits, will find Mr. Barrett's remarks on the structure, pattern and classification of that extensive group of moths (the *Noctuæ*) well worth perusal. They form one of the most dominant groups of the larger moths at the present day; but they are very compact, and it is exceedingly difficult to find satisfactory characters by which they can be divided into families. This has been attempted by Guenée, but many writers since his time have abandoned the idea of subdividing the *Noctuæ*, except into genera. Mr. Barrett evidently recognises three main families at least; but we shall be interested to see where he places some of the more aberrant genera usually included in the *Noctuæ*, when he arrives at them in later volumes of his work.

How to Study Wild Flowers. By the Rev. George Henslow, M.A., F.L.S., F.G.S., &c. Pp. 224 (with fifty-seven illustrations). (London: The Religious Tract Society, 1896.)

THIS is a useful little book, and doubtless it will be welcome to many people who live in the country, and who may desire to gain a systematic acquaintance with the flowering plants around them.

We could wish, however, that the author had emphasised the "Floral Formula" part of the business a trifle less, and had given a little more attention to floral diagrams instead. As regards the latter, we might remark that the position of the mother-axis ought always (if possible) to be indicated in the diagrams, otherwise how are his readers to tell which aspect of the flower is posterior and which anterior? A neglect of this necessary adjunct to these figures will tend to render such diagrams as the learner may attempt to construct for himself quite useless, inasmuch as his attention is not directed, as it ought to be, to a definite orientation of the different parts of the flower.

Some of the plants receive a somewhat desultory treatment; but notwithstanding this, and in spite of some errors we have noticed, the book is well worth looking into, on account of the refreshing number of interesting first-hand details which it contains.

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